# DESTINATION: MARS



## ACTIVITY PACKET



National Aeronautics and Space Administration Lyndon B. Johnson Space Center Astromaterials Research and Exploration Science (ARES)

> Houston Museum of Natural Science Burke Baker Planetarium Houston, Texas



## ABOUT

## DESTINATION: MARS

#### CONTENTS

Lesson 1.	Getting There — Navigation	
	and Trajectory	3
Lesson 2.	Tricky Terrain — Investigating	
	Planetary Soils	11
Lesson 3.	Lava Layering — Making and	
	Mapping a Volcano	17
Lesson 4.	Mapping Mars — Geologic	
	Sequence of Craters and River	
	Channels	27
Lesson 5.	Searching for Life on Mars	35
Lesson 6.	Why Do We Explore?	49
Glossary		57
Mars Fact Sheet		58
Science Process Skills		58
Science and Math Standards		60
Mars Resources		61

The lessons are designed to increase students' knowledge, awareness, and curiosity about the process of scientific exploration of Mars. As scientists look for evidence of life on Mars, they will focus much of their search in areas where volcanic heat and water interacted early in the geologic history of the planet. Two lessons in this packet on volcanoes and mapping river channels reinforce these basic geologic processes. These lessons lead directly to a set of simple activities that help students develop an understanding of the microbial life scientists will be searching for on Mars. The hands-on, interdisciplinary activities reinforce and extend important concepts within existing curricula.

#### ACKNOWLEDGEMENTS

This activity packet was developed by teachers working with scientists at Johnson Space Center's Astromaterials Research and Exploration Science Office (ARES).

#### Marilyn M. Lindstrom

Planetary Scientist, NASA JSC

#### **Kathleen Mayse**

Teacher, Clear Creek ISD, Houston, Texas

#### Linda Schrade

Teacher, Clear Creek ISD, Houston, Texas

#### **Karen Stocco**

Teacher, Pasadena ISD, Pasadena, Texas

### Kay Tobola

Teacher, Clear Creek ISD, Houston, Texas

#### Carlton C. Allen

Planetary Scientist, NASA JSC

#### Jaclyn S. B. Allen

Scientist/Ed. Specialist, Lockheed Martin

#### **Anita Dodson**

Graphic Design, Lockheed Martin

#### EDUCATIONAL VIDEO

The *Destination: Mars* educational video presents a useful parallel with the lessons. The 33 minute video chronicles a simulated human mission to Mars in 2018. The six astronauts narrate their exploration through "real time" log reports. *Destination: Mars* is available as an educational video from NASA CORE, Lorain County Joint Vocational School, 15181 Route 58 South, Oberlin, OH 44074, (440) 774-1051, ext. 249 or 293, Fax (440) 774-2144. It is also a multimedia planetarium program available from Spitz Inc., P. O. Box 198, Route 1, Chadds Ford, PA 19317, contact John Schran (610) 459-5200, Fax (610) 459-8330.

#### INTERNET

## NASA Johnson Space Center, Astromaterials Research and Exploration Science (ARES)

http://ares.jsc.nasa.gov/education

Contains educational material and information about astrobiology, astromaterials, and planetary missions and science.

#### **Lunar and Planetary Institute**

http://lpi.usra.edu

Contains educational material and Lunar and Mars images.

Mars Exploration at NASA, Jet Propulsion Laboratory http://mars.jpl.nasa.gov



2 Destination: Mars 2/02 NASA JSC